

LW/AM/SW₁/SW₂/SW₃/SW₄/SW₅/FM
SOLID STATE 8 BAND RADIO

MODEL TF-182 & TF-182FB

SERVICE MANUAL

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SPECIFICATIONS

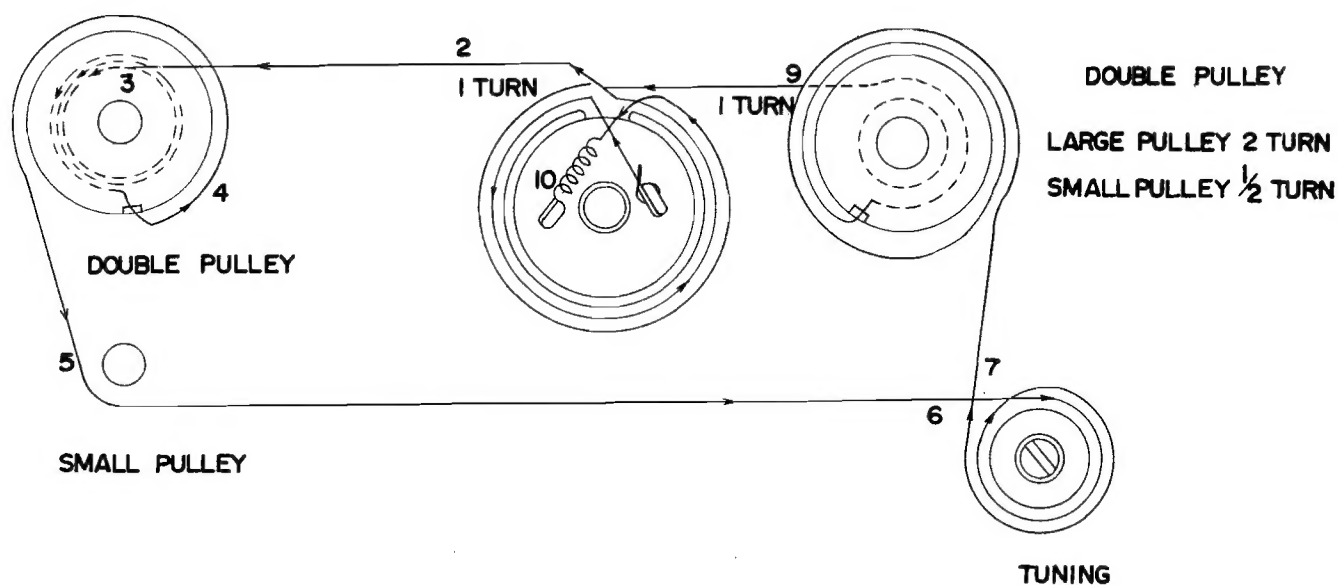
| | | |
|--------------------|---|--|
| Circuit | : | 19 AF and RF Transistors 1 Transistor Voltage Stabilizer 14 Diodes |
| Frequency | : | LW 150 - 400 KHz AM 535 - 1605 KHz SW1 1.6 - 4 MHz SW2 4 - 12 MHz SW3 12 - 22 MHz SW4 22 - 30 MHz SW5 5.7 - 6.6 MHz FM 88 - 108 MHz |
| Intermediate Freq. | : | LW, AM, SW1, SW2, SW3, SW4, SW5, - 455 KHz FM - 10.7 MHz |
| Power output | : | Maximum output 1.5 W Undistorted output 1 W |
| Batteries | : | "D" X 6 pcs. Flashlight batteries |
| AC source | : | 115 V and 230 V, 60 Hz 7 W |
| Speaker | : | 5" Permanent Dynamic Wide Range |
| Antenna | : | Two ferrite rods for LW, AM, SW1, SW2, SW3, SW4, SW5 Telescopic rod antenna for FM, SW1, SW2 |
| Dimensions | : | 19 1/2" (W) X 10 1/2" (H) X 5 1/2" (D) |
| Weight | : | 15.6 lbs with batteries |
| Accessories | : | Earphone Batteries External antenna plug |

CHASSIS REMOVAL

1. Remove the Tuning knob, Tone control knob, Volume control knob and squelch knob.
2. Remove the four screws of the cabinet back cover.
3. Remove the earphone jack, EP/SP jack and Antenna jack from the cabinet back cover.
4. Remove the six (Deck mounting) screw and remove the 3 wire from BFO AFC switch and take out the deck from cabinet.
5. Remove the four (Audio P. C. B. mounting) screw and lift up the Audio P. C. B.

DIAL STRINGING

SMALL PULLEY $2\frac{3}{4}$ TURN
LARGE PULLEY $\frac{1}{3}$ TURN



VOLTAGE CHART

NOTE: The below values are the voltages between the earth pattern and the corresponding points.
The values are measured with V. T. V. M and all negative signs are omitted.

| Tuning Range | Q1 SE5006 | | | Q2 SE3001 | | | Q3 SE3001 | | | Q4 SE3001 | | | Q5 SE3001 | | | Q6 SE3001 | | | Q7 SE3001 | | |
|-----------------|--------------|-----|-----|--------------|-----|-----|--------------|-----|-----|--------------|-----|-----|--------------|-----|-----|--------------|-----|------|--------------|-----|-----|
| | Vb | Ve | Vc | Vb | Ve | Vc | Vb | Ve | Vc | Vb | Ve | Vc | Vb | Ve | Vc | Vb | Ve | Vc | Vb | Ve | Vc |
| L W | - | - | - | - | - | - | 5.5 | 6.8 | 0.8 | - | - | - | - | - | - | - | - | - | - | - | - |
| A M | - | - | - | - | - | - | 5.5 | 6.8 | 0.8 | - | - | - | - | - | - | - | - | - | - | - | - |
| S W1 | - | - | - | - | - | - | 5.5 | 6.8 | 0.8 | - | - | - | - | - | - | - | - | - | - | - | - |
| S W2 | - | - | - | - | - | - | 5.5 | 6.8 | 0.8 | - | - | - | - | - | - | - | - | - | - | - | - |
| S W3 | - | - | - | - | - | - | 5.5 | 6.8 | 0.8 | - | - | - | - | - | - | - | - | - | - | - | - |
| S W4 | - | - | - | - | - | - | 5.5 | 6.8 | 0.8 | - | - | - | - | - | - | - | - | - | - | - | - |
| S W5 | - | - | - | - | - | - | 5.5 | 6.8 | 0.8 | - | - | - | - | - | - | - | - | - | - | - | - |
| F M | 5.4 | 6.6 | 0.7 | 4.0 | 0.1 | 5.0 | - | - | - | 5.2 | 6.0 | 0.4 | 5.5 | 6.2 | 0.4 | 5.4 | 6.2 | 0.43 | 5.0 | 5.8 | 2.5 |

NOTE: The below values are the voltages between the earth pattern and the corresponding points.
The values are measured with V.T.V.M and all negative signs are omitted.

| Tuning | Q8 CS1254 | | | Q9 CS1254 | | | Q10 SE5001 | | | Q11 SE1001 | | | Q12 SE1001 | | | Q13 SE5006 | | | Q14 SE4010 | | |
|--------|--------------|-----|-----|--------------|-----|-----|---------------|-----|------|---------------|-----|----|---------------|-----|----|---------------|-----|----|---------------|-----|----|
| Range | Vb | Ve | Vc | Vb | Ve | Vc | Vb | Ve | Vc | Vb | Ve | Vc | Vb | Ve | Vc | Vb | Ve | Vc | Vb | Ve | Vc |
| L W | - | - | - | - | - | - | 5.6 | 6.6 | 0.01 | 5.5 | 6.8 | 0 | 6.0 | 6.8 | 0 | 4.0 | 5.0 | 0 | 4.0 | 3.1 | 0 |
| A M | - | - | - | - | - | - | 5.6 | 6.6 | 0.01 | 5.5 | 6.8 | 0 | 6.0 | 6.8 | 0 | 4.2 | 4.8 | 0 | 4.0 | 3.1 | 0 |
| S W1 | - | - | - | - | - | - | 6.0 | 6.7 | 0.01 | 5.4 | 6.7 | 0 | 6.0 | 6.8 | 0 | 4.2 | 4.8 | 0 | 4.0 | 3.1 | 0 |
| S W2 | - | - | - | - | - | - | 6.0 | 6.7 | 0.01 | 5.4 | 6.7 | 0 | 6.0 | 6.8 | 0 | 4.2 | 4.8 | 0 | 4.0 | 3.1 | 0 |
| S W3 | - | - | - | - | - | - | 6.0 | 6.7 | 0.01 | 5.4 | 6.7 | 0 | 6.0 | 6.8 | 0 | 4.2 | 4.8 | 0 | 4.0 | 3.1 | 0 |
| S W4 | - | - | - | - | - | - | 6.0 | 6.7 | 0.01 | 5.4 | 6.7 | 0 | 6.0 | 6.8 | 0 | 4.2 | 4.8 | 0 | 4.0 | 3.1 | 0 |
| S W5 | - | - | - | - | - | - | 6.0 | 6.7 | 0.01 | 5.4 | 6.7 | 0 | 6.0 | 6.8 | 0 | 4.2 | 4.8 | 0 | 4.0 | 3.1 | 0 |
| F M | 5.9 | 6.6 | 6.5 | 6.7 | 6.6 | 5.9 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

NOTE: The below values are the voltages between the earth pattern and the corresponding points.
The values are measured with V.T.V.M and all negative signs are omitted.

| Tuning Range | Q15 SE4010 | | | Q16 2SB186 | | | Q17 2SB187 | | | Q18 2SB405 | | | Q19 2SB405 | | | Q20 2SB185 | | |
|-----------------|---------------|-----|-----|---------------|-----|-----|---------------|-----|-----|---------------|-----|-----|---------------|----|-----|---------------|-----|-----|
| | Vb | Ve | Vc | Vb | Ve | Vc | Vb | Ve | Vc | Vb | Ve | Vc | Vb | Ve | Vc | Vb | Ve | Vc |
| L W | 2.0 | 3.5 | 5.8 | 2.5 | 2.5 | 5.0 | 1.3 | 1.1 | 7.3 | 4.4 | 4.4 | 8.4 | 0.16 | 0 | 4.4 | 8.2 | 8.4 | 8.4 |
| A M | 2.0 | 3.5 | 5.8 | 2.5 | 2.5 | 5.0 | 1.3 | 1.1 | 7.3 | 4.4 | 4.4 | 8.4 | 0.16 | 0 | 4.4 | 8.2 | 8.4 | 8.4 |
| S W1 | 2.0 | 3.5 | 5.8 | 2.5 | 2.5 | 5.0 | 1.3 | 1.1 | 7.3 | 4.4 | 4.4 | 8.4 | 0.16 | 0 | 4.4 | 8.2 | 8.4 | 8.4 |
| S W2 | 2.0 | 3.5 | 5.8 | 2.5 | 2.5 | 5.0 | 1.3 | 1.1 | 7.3 | 4.4 | 4.4 | 8.4 | 0.16 | 0 | 4.4 | 8.2 | 8.4 | 8.4 |
| S W3 | 2.0 | 3.5 | 5.8 | 2.5 | 2.5 | 5.0 | 1.3 | 1.1 | 7.3 | 4.4 | 4.4 | 8.4 | 0.16 | 0 | 4.4 | 8.2 | 8.4 | 8.4 |
| S W4 | 2.0 | 3.5 | 5.8 | 2.5 | 2.5 | 5.0 | 1.3 | 1.1 | 7.3 | 4.4 | 4.4 | 8.4 | 0.16 | 0 | 4.4 | 8.2 | 8.4 | 8.4 |
| S W5 | 2.0 | 3.5 | 5.8 | 2.5 | 2.5 | 5.0 | 1.3 | 1.1 | 7.3 | 4.4 | 4.4 | 8.4 | 0.16 | 0 | 4.4 | 8.2 | 8.4 | 8.4 |
| F M | 2.0 | 3.5 | 5.8 | 2.5 | 2.5 | 5.0 | 1.3 | 1.1 | 7.3 | 4.4 | 4.4 | 8.4 | 0.16 | 0 | 4.4 | 8.2 | 8.4 | 8.4 |

ALIGNMENT INSTRUCTIONS

INSTRUMENT REQUIRED

Signal Source

1. RF signal generator (AM, FM).
2. IF sweep generator (Centered 455 KHz for AM and 10.7 MHz for FM).

Output Indicator

1. V. T. V. M
2. Oscilloscope.

General Preparation

1. Check source voltage.
2. Set function switch to band being aligned.
3. Tone control should be kept "treble". Squelch control should be kept "OFF".
4. Telescopic antenna should be closed.
5. Connect low side of signal source and output indicator to chassis ground unless otherwise specified.
6. Signal input should be kept as low possible to avoid A. V. C and AFC action. (Set output indicator to high sensitivity.)
7. Standard modulation is 400 Hz 30% mod. for AM.
(400 Hz 22.5 KHz dev. for FM.)

REGULAR ADJUSTING STEP

| For Band | For Stages on each band |
|----------|---|
| (1) FM | 1st : IF (and detector on FM). 2nd : RF Frequency range. 3rd : RF Tracking. |
| (2) AM | 1st : IF. 2nd : RF Frequency range. 3rd : RF Tracking. |

FM IF ALIGNMENT

| Step | Signal source | Set signal to | Alignment indicator | Set radio dial to | Adjust | Adjust for |
|------|--|----------------------------|-------------------------|-------------------|------------------------|---|
| | connect to | | connect to | | | |
| | (IF and detector stage) | | | | | |
| 1 | FM IF sweep gene. | Sweep centered 10.7 MHz | Oscilloscope | Max. Freq. | T1 (1st IFT) | Max. symmetrical response equal heights. |
| | TR2 Emit. (IF input term.) | | C74 (AF input term.) | | | |
| 2 | " | " | " | " | T2, T3 (2nd IFT) | " |
| 3 | " | " | " | " | T4, T5 (3rd IFT) | " |
| 4 | " | " | " | " | T6 (4th IFT) | " |
| 5 | " | " | " | " | T7 (Det. coil) | Symmetrical response centered 10.7 MHz |
| 6 | (Repeat steps 1 to 5 to obtain a balanced "S" curve linearity) | | | | | |

AM IF ALIGNMENT

| Step | Signal source | Set signal to | Alignment indicator | Set radio dial to | Adjust | Adjust for |
|------|-----------------------|---------------------------|----------------------------------|-------------------|------------------------|------------|
| | connect to | | connect to | | | |
| 1 | AM IF sweep gene. | Sweep centered 455 KHz | Oscilloscope (AF input term.) | Min. Freq. | T8, T9 (1st IFT) | Maximum. |
| 2 | " | " | " | " | T10 (2nd IFT) | " |
| 3 | " | " | " | " | T11 (3rd IFT) | " |
| 4 | (Repeat steps 1 to 3) | | | | | |

AM ALIGNMENT

| Step | Signal source | Set signal to | Alignment indicator | Set radio dial to | Adjust | Adjust for |
|------|--|-----------------------------------|--|------------------------|------------------------|------------|
| | connect to | | connect to | | | |
| 1 | AM signal gene. | AM 510 KHz (modu- lated) | V. T. V. M | 510 KHz (low end) | L20 (OSC. coil) | Maximum |
| | a standard radiating loop | | across speaker voice coil (Using earphone plug w/8 ohm resistive load is recommended) | | | |
| 2 | " | 1650 KHz (modu- lated) | " | 1650 KHz (high end) | TC15 (OSC. trim) | " |
| 3 | (Repeat steps 1 and 2 as necessary to obtain frequency range) | | | | | |
| 4 | " | 610 KHz (modu- lated) | " | 610 KHz | L8 (ANT. coil) | " |
| 5 | " | 1400 KHz (modu- lated) | " | 1400 KHz | TC4 (ANT. trim) | " |
| 6 | (Repeat steps 4 and 5 to minimize tracking error, and also step 3 if necessary.) | | | | | |

LW ALIGNMENT

| Step | Signal source | Set signal to | Alignment indicator | Set radio dial to | Adjust | Adjust for |
|------|--|---------------------|--|--------------------|------------------|------------|
| | connect to | | connect to | | | |
| 1 | AM signal gene. | 140 KHz (modulated) | across speaker voice coil (Using earphone plug w/8 ohm resistive load is recommended.) | 140 KHz (low end) | L21 (OSC. coil) | Maximum |
| | a standard radiating loop | | | | | |
| 2 | " | 420 KHz (modulated) | " | 420 KHz (high end) | TC16 (OSC. trim) | " |
| 3 | (Repeat steps 1 and 2 to obtain frequency range) | | | | | |
| 4 | " | 200 KHz (modulated) | " | 200 KHz | L8 (ANT. coil) | " |
| 5 | " | 350 KHz (modulated) | " | 350 KHz | TC3 (ANT. trim) | " |
| 6 | (Repeat steps 4 and 5 to minimize tracking error, and also step 3 if necessary.) | | | | | |

SW₁ ALIGNMENT

| Step | Signal source | Set signal | Alignment indicator | Set radio | Adjust | Adjust |
|------|---|----------------------|---|--------------------|------------------|---------|
| | connect to | to | connect to | dial to | | for |
| 1 | AM signal gene. | | | | | |
| | a standard radiating loop | 1.58 MHz (modulated) | across speaker voice coil (Using earphone plug w/8 ohm resistive load is recommended) | 1.58 MHz (low end) | L19 (OSC. coil) | Maximum |
| 2 | " | 4.2 MHz (modulated) | " | 4.2 MHz (high end) | TC14 (OSC. trim) | " |
| 3 | (Repeat steps 1 and 2 to obtain frequency range) | | | | | |
| 4 | " | 1.9 MHz (modulated) | " | 1.9 MHz | L10 (ANT. coil) | " |
| 5 | " | 3.8 MHz (modulated) | " | 3.8 MHz | TC5 (ANT. trim) | " |
| 6 | (Repeat steps 4 and 5 to minimize tracking error, and also step 3 if necessary) | | | | | |

SW₂ ALIGNMENT

| Step | Signal source | Set signal to | Alignment indicator | Set radio dial to | Adjust | Adjust for |
|------|--|----------------------|---|---------------------|------------------|------------|
| | connect to | | connect to | | | |
| 1 | AM signal gene. | 3.8 MHz (modulated) | across speaker voice coil (Using earphone plug w/8 ohm resistive load is recommended) | 3.8 MHz (low end) | L18 (OSC. coil) | Maximum |
| | a standard radiating loop | | | | | |
| 2 | " | 12.5 MHz (modulated) | " | 12.5 MHz (high end) | TC13 (OSC. trim) | " |
| 3 | (Repeat steps 1 and 2 to obtain frequency range) | | | | | |
| 4 | " | 4.2 MHz (modulated) | " | 4.2 MHz | L11 (ANT. coil) | " |
| 5 | " | 9 MHz (modulated) | " | 9 MHz | TC6 (ANT. trim) | " |
| 6 | (Repeat steps 4 and 5 to minimize tracking error, and also step 3 if necessary.) | | | | | |

SW₃ ALIGNMENT

| Step | Signal source | Set signal to | Alignment indicator | Set radio dial to | Adjust | Adjust for |
|------|--|----------------------|---|---------------------|------------------|------------|
| | connect to | | connect to | | | |
| 1 | AM signal gene. | 11.5 MHz (modulated) | across speaker voice coil (Using earphone plug w/8 ohm resistive load is recommended) | 11.5 MHz (low end) | L17 (OSC. coil) | Maximum |
| | a standard radiating loop | | | | | |
| 2 | | 22.5 MHz (modulated) | | 22.5 MHz (high end) | TC12 (OSC. trim) | |
| 3 | (Repeat steps 1 and 2 to obtain frequency range.) | | | | | |
| 4 | " | 13 MHz (modulated) | " | 13 MHz | L12 (ANT. coil) | " |
| 5 | " | 21 MHz (modulated) | " | 21 MHz | TC7 (ANT. trim) | " |
| 6 | (Repeat steps 4 and 5 to minimize tracking error, and also step 3 if necessary.) | | | | | |

SW₄ ALIGNMENT

| Step | Signal source | Set signal to | Alignment indicator | Set radio dial to | Adjust | Adjust for |
|------|--|----------------------|---|---------------------|------------------|------------|
| | connect to | | connect to | | | |
| 1 | AM signal gene. | 21.5 MHz (modulated) | across speaker voice coil (Using earphone plug w/8 ohm resistive load is recommended) | 21.5 MHz (low end) | L16 (OSC. coil) | Maximum |
| | a standard radiating loop | | | | | |
| 2 | " | 30.5 MHz (modulated) | " | 30.5 MHz (high end) | TC11 (OSC. trim) | " |
| 3 | (Repeat steps 1 and 2 to obtain frequency range.) | | | | | |
| 4 | " | 23 MHz (modulated) | " | 23 MHz | L13 (ANT. coil) | " |
| 5 | " | 29 MHz (modulated) | " | 29 MHz | TC8 (ANT. trim) | " |
| 6 | (Repeat steps 4 and 5 to minimize tracking error, and also step 3 if necessary.) | | | | | |

SW₅ ALIGNMENT

| Step | Signal source | Set signal to | Alignment indicator | Set radio dial to | Adjust | Adjust for |
|------|---|---------------------|---|--------------------|------------------|------------|
| | connect to | | connect to | | | |
| 1 | AM signal gene. | 5.6 MHz (modulated) | across speaker voice coil (Using earphone plug w/8 ohm resistive load is recommended) | 5.6 MHz (low end) | L15 (OSC. coil) | Maximum |
| | a standard radiating loop | | | | | |
| 2 | " | 6.7 MHz (modulated) | " | 6.7 MHz (high end) | TC10 (OSC. trim) | " |
| 3 | (Repeat steps 1 and 2 to obtain frequency range.) | | | | | |
| 4 | " | 5.8 MHz (modulated) | " | 5.8 MHz | L14 (ANT. coil) | " |
| 5 | " | 5.8 MHz (modulated) | " | 6.5 MHz | TC9 (ANT. trim) | " |
| 6 | (Repeat steps 4 and 5 to minimize tracking error, and also step 3 if necessary.) | | | | | |

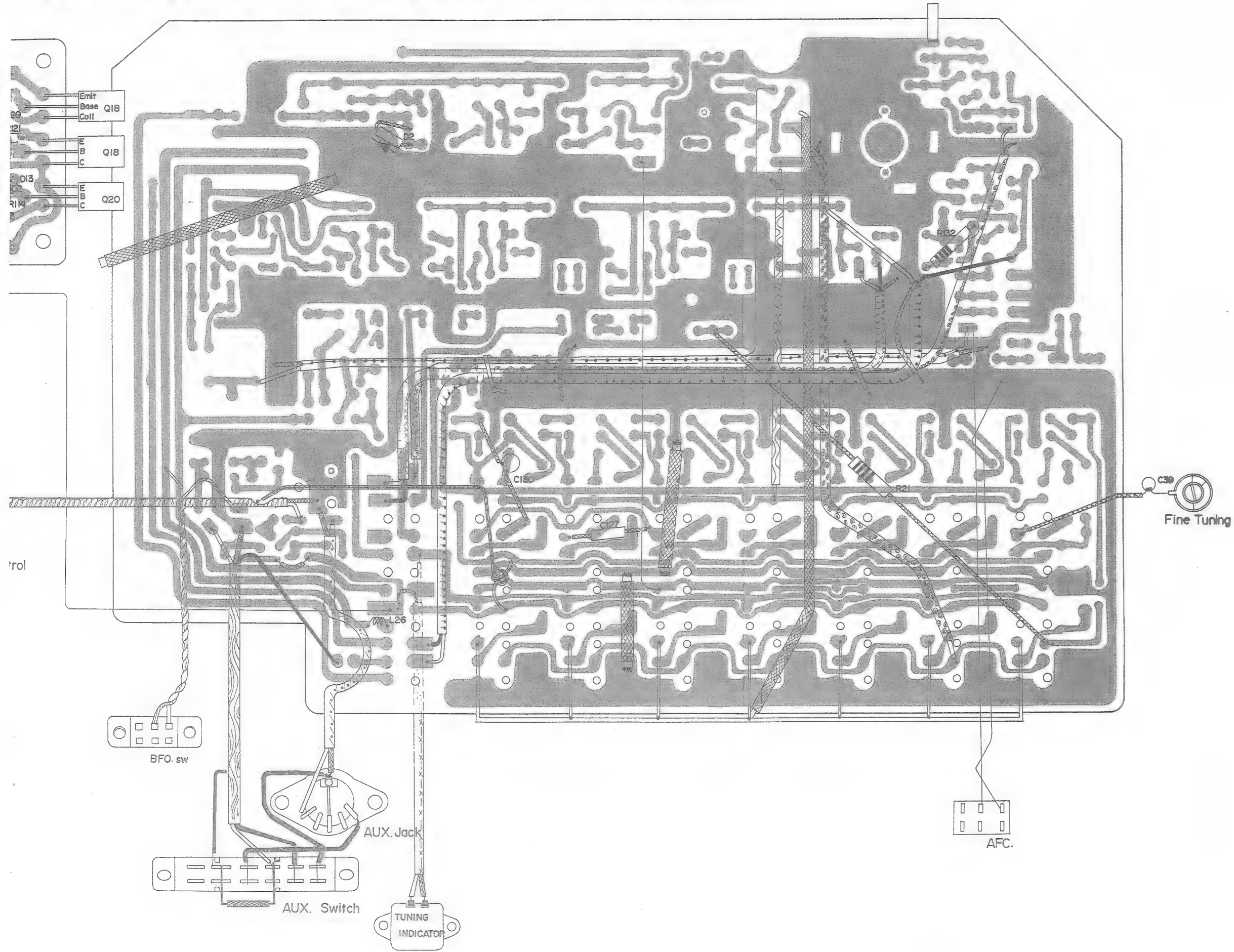
FM ALIGNMENT

| Step | Signal source | Set signal to | Alignment indicator | Set radio dial to | Adjust | Adjust for |
|------------|---|---------------------|--|-------------------|-----------------|------------|
| | connect to | | connect to | | | |
| (RF stage) | | | | | | |
| 1 | FM signal gene. | 88 MHz (modulated) | V. T. V. M | 88 MHz | L6 (OSC. coil) | Maximum |
| | EXT ANT jack Used matching network | | across speaker voice coil (Using earphone plug w/8 ohm resistor is recommended) | | | |
| 2 | " | 108 MHz (modulated) | " | 108 MHz | TC2 (OSC. trim) | " |
| 3 | (Repeat steps 1 and 2 to obtain frequency range.) | | | | | |
| 4 | " | 90 MHz (modulated) | " | 90 MHz | L4 (RF coil) | " |
| 5 | " | 106 MHz (modulated) | " | 106 MHz | TC1 (RF trim) | " |
| 6 | (Repeat steps 4 and 5 to minimize tracking error, and also step 3 if necessary.) | | | | | |

MODEL ; TF-182 & TF-182 FB



PRINTED CIRCUIT BOARD-BOTTOM VIEW MODEL ; TF-182 & TF-182 FB



REPLACEMENT PARTS LIST

MODEL ; TF-182 & TF-182 FB

| <u>Symbol Location</u> | <u>Description</u> | | <u>Remarks</u> | <u>Part No.</u> |
|----------------------------|--------------------|---------------|-----------------------------------|-----------------|
| C1 | Cap. 50 pF | FM Filter | Ceramic cap. $\pm 5\%$ | |
| C2 | " 40 pF | " | " " | |
| C3 | " 10 pF | " | " " | |
| C4 | " 20 pF | TR1 Emit. | " " | |
| C5 | " " | FM ANT | " " | |
| C6 | " 0.02 μ F | FM - B line | " $+80\%$ -20% | |
| C7 | " " | TR1 Base | " " | |
| C8 | | | | |
| C9 | " 20 pF | FM RF | " $\pm 5\%$ | |
| C10 | " 3 pF | TR2 Emit. | " $\pm 0.5\text{pF}$ | |
| C11 | " 33 pF | 10.7 MHz Trap | " $\pm 5\%$ | |
| C12 | " 330 pF | " | " $+80\%$ -20% | |
| C13 | " 4 pF | TR2 Emit. | " $\pm 0.5\text{pF}$ | |
| C14 | " 0.02 μ F | TR2 Base | " $+80\%$ -20% | |
| C15 | " 15 pF | AFC | " $\pm 5\%$ | |
| C16 | " 0.02 μ F | AFC | " $+80\%$ -20% | |
| C17 | " 5 pF | FM OSC | " $\pm 0.5\text{pF}$ | |
| C18 | " 0.01 μ F | AFC | " $+80\%$ -20% | |
| C19 | " 0.01 μ F | " | " " | |
| C20 | " 0.001 μ F | FM Det. | " $\pm 20\%$ | |
| C21 | " 0.001 μ F | AM Det. | Mylar cap. $\pm 20\%$ | |
| C22 | | | | |
| C23 | " 33 pF | SW4 OSC | Ceramic cap. $\pm 5\%$ | |
| C24 | " 75 pF | SW3 ANT | Ceramic cap. $\pm 5\%$ | |
| C25 | " 500 μ F | - B line | Electrolytic tubular cap. 10wV | |
| C26 | " 0.04 μ F | AM ANT | Ceramic cap. $+80\%$ -20% | |
| C27 | " 0.04 μ F | SW4 ANT | Ceramic cap. " | |
| C28 | " " | TR13 Base | " " | |
| C29 | " 0.04 μ F | TR3 Emit. | " " | |
| C30 | " " | " | " " | |

| <u>Symbol</u> <u>Location</u> | <u>Description</u> | | <u>Remarks</u> | <u>Part No.</u> |
|----------------------------------|--------------------|--------------|----------------|--|
| C31 | Cap. | 0.04 μ F | AM OSC | Ceramic cap. $\begin{smallmatrix} +80\% \\ -20\% \end{smallmatrix}$ |
| C32 | " | 1500 pF | SW5 OSC | Polystyrol cap. $\begin{smallmatrix} \\ \pm 10\% \end{smallmatrix}$ |
| C33 | " | 0-470 pF | " | " $\begin{smallmatrix} \\ \pm 5\% \end{smallmatrix}$ |
| C34 | " | 50 pF | LW RF | Ceramic cap. " |
| C35 | " | 150 pF | " | " $\begin{smallmatrix} \\ \pm 10\% \end{smallmatrix}$ |
| C36 | " | 0.04 μ F | SW4 ANT | " $\begin{smallmatrix} +80\% \\ -20\% \end{smallmatrix}$ |
| C37 | " | 280 p | SW4 DSC | Polystyrol cap. $\begin{smallmatrix} \\ \pm 5\% \end{smallmatrix}$ |
| C38 | " | 0.02 μ F | LW RF | Mylar cap. $\begin{smallmatrix} \\ \pm 20\% \end{smallmatrix}$ |
| C39 | " | 3 pF | Fine tuning | Ceramic cap. $\begin{smallmatrix} \\ \pm 0.5\text{pF} \end{smallmatrix}$ |
| C40 | " | 92 pF | SW3 OSC | " $\begin{smallmatrix} \\ \pm 5\% \end{smallmatrix}$ |
| C41 | " | 330 pF | " | Polystyrol cap. $\begin{smallmatrix} \\ \pm 5\% \end{smallmatrix}$ |
| C42 | " | 2200 pF | SW2 OSC | " $\begin{smallmatrix} \\ \pm 10\% \end{smallmatrix}$ |
| C43 | " | 680 pF | " | " $\begin{smallmatrix} \\ \pm 5\% \end{smallmatrix}$ |
| C44 | " | 5 pF | SW1 OSC | Ceramic cap. $\begin{smallmatrix} \\ \pm 0.5\text{pF} \end{smallmatrix}$ |
| C45 | " | 0.0033 | " | Mylar cap. $\begin{smallmatrix} \\ \pm 20\% \end{smallmatrix}$ |
| C46 | " | 280 pF | AM OSC | Polystyrol cap. $\begin{smallmatrix} \\ \pm 5\% \end{smallmatrix}$ |
| C47 | | | | |
| C48 | " | 0.0047 | AM OSC | Mylar cap. $\begin{smallmatrix} \\ \pm 20\% \end{smallmatrix}$ |
| C49 | " | 120 pF | LW OSC | Mylar cap. $\begin{smallmatrix} \\ \pm 5\% \end{smallmatrix}$ |
| C50 | " | 12 pF | " | Ceramic cap. " |
| C51 | " | 0.01 μ F | " | Mylar cap. $\begin{smallmatrix} \\ \pm 20\% \end{smallmatrix}$ |
| C52 | | | | |
| C53 | | | | |
| C54 | " | 0.01 μ F | TR4 Base | Ceramic cap. $\begin{smallmatrix} +80\% \\ -20\% \end{smallmatrix}$ |
| C55 | " | 0.02 μ F | TR4 Emit. | " " |
| C56 | " | 40 pF | FM 2nd IF | " $\begin{smallmatrix} \\ \pm 5\% \end{smallmatrix}$ |
| C57 | " | 0.02 μ F | | " $\begin{smallmatrix} +80\% \\ -20\% \end{smallmatrix}$ |
| C58 | " | 0.01 μ F | TR5 Base | " " |
| C59 | " | 0.01 μ F | TR5 Emit. | " " |
| C60 | " | 0.02 μ F | | " " |
| C61 | " | 15 pF | TR5 Coll. | " $\begin{smallmatrix} \\ \pm 5\% \end{smallmatrix}$ |

| <u>Symbol</u> <u>Location</u> | <u>Description</u> | | | <u>Remarks</u> | <u>Part No.</u> |
|----------------------------------|--------------------|----------------|------------|-----------------|--------------------|
| C62 | Cap. | 40 pF | FM 3rd IF | Ceramic cap. | $\pm 5\%$ |
| C63 | " | 0.01 μ F | TR6 Base | " | $+80\%$ -20% |
| C64 | " | 0.02 μ F | | " | " |
| C65 | " | 0.01 μ F | TR6 Emit. | " | " |
| C66 | " | 20 pF | TR6 Coll. | " | $\pm 5\%$ |
| C67 | " | 0.02 | | " | $+80\%$ -20% |
| C68 | " | 0.01 μ F | TR7 Base | " | " |
| C69 | " | " | TR7 Emit. | " | " |
| C70 | " | 0.02 μ F | | " | " |
| C71 | " | 30 pF | FM Det. | " | $\pm 5\%$ |
| C72 | " | 8 pF | TR7 Coll. | " | ± 0.5 pF |
| C73 | " | 0.001 μ F | FM Det. | " | $\pm 20\%$ |
| C74 | " | " | | Mylar cap. | " |
| C75 | " | 0.02 μ F | | Ceramic cap. | $+80\%$ -20% |
| C76 | " | " | | " | " |
| C77 | " | " | | " | " |
| C78 | " | " | Squelch | " | " |
| C79 | " | " | | " | " |
| C80 | " | 0.04 μ F | | " | " |
| C81 | " | 2 pF | TR11 Base | " | ± 0.5 pF |
| C82 | " | 0.04 μ F | TR11 Emit. | " | $+80\%$ -20% |
| C83 | " | 0.02 μ F | TR12 Base | " | " |
| C84 | " | 0.04 μ F | TR12 Emit. | " | " |
| C85 | " | 0.04 μ F | AM Det. | " | " |
| C86 | " | 0.001 μ F | " | Mylar cap. | $\pm 20\%$ |
| C87 | | | | | |
| C88 | " | 0.004 μ F | - B line | Ceramic cap. | $+80\%$ -20% |
| C89 | " | 0.0047 μ F | AM Det. | Mylar cap. | $\pm 20\%$ |
| C90 | " | 0.04 μ F | TR10 Emit. | Ceramic cap. | $+80\%$ -20% |
| C91 | " | " | - B line | " | " |
| C92 | " | " | " | " | " |
| C93 | " | 680 pF | TR14 Coll. | Polystyrol cap. | $\pm 5\%$ |
| C94 | " | 0.04 μ F | B. F. O. | Ceramic cap. | $+80\%$ -20% |

| <u>Symbol</u> <u>Location</u> | | <u>Description</u> | <u>Remarks</u> | <u>Part No.</u> |
|----------------------------------|------|--------------------|-----------------------|------------------------------------|
| C95 | Cap. | 370 pF | TR14 Base | Polystyrol cap. +5% |
| C96 | " | 280 pF | TR14 Emit. | " " |
| C97 | " | 0.02 μ F | Tone volume | Mylar cap. +20% |
| C98 | " | 680 pF | TR17 Base - Coll. | Ceramic cap. " |
| C99 | | | | |
| C100 | " | 0.01 μ F | Rectifier | Ceramic cap. +80% -20% |
| C101 | " | " | " | " " |
| C102 | " | 0.04 μ F | Voltage stabilizer | " " |
| C103 | " | 100 μ F | TR13 Emit. | Electrolytic tubular cap. 10 wV |
| C104 | " | 0.04 μ F | Audio Power | Ceramic cap. +80% -20% |
| C105 | " | 10 μ F | FM Det. | Electrolytic tubular cap. 10 wV |
| C106 | | | | |
| C107 | " | 0.47 μ F | B. F. O. | Electrolytic tubular cap. 10 wV |
| C108 | " | 10 μ F | - B line | " " |
| C109 | " | 50 μ F | TR9 Coll. | " " |
| C110 | " | 30 μ F | AM Det. | " " |
| C111 | " | 50 μ F | -B line | " " |
| C112 | " | 150 μ F | LW RF | Ceramic cap. +10% |
| C113 | " | 3 μ F | TR15 Base | Electrolytic tubular cap. 10 wV |
| C114 | " | " | TR15 Coll. | " " |
| C115 | " | " | Aux. switch | " " |
| C116 | " | 50 μ F | TR15 Emit. | " " |
| C117 | " | " | TR16 Emit. | " " |
| C118 | " | 5 μ F | TR17 Base | " " |
| C119 | " | 50 μ F | TR17 Emit. | " " |
| C120 | " | 200 μ F | -B line | " " |
| C121 | " | 500 μ F | " | " " |
| C122 | " | " | " | " " |
| C123 | " | 200 μ F | TR19 Coll. | " " |
| C124 | " | 500 μ F | TR20 Coll. | " " |

| <u>Symbol</u> <u>Location</u> | <u>Description</u> | | | <u>Remarks</u> | <u>Part No.</u> |
|----------------------------------|--------------------|---------|----------|------------------------------|-----------------|
| C125 | Cap. | 100 pF | SW4 ANT. | Polystyrol cap. $\pm 5\%$ | |
| C126 | " | 680 pF | SW5 ANT. | " | " |
| C127 | " | 100 pF | SW4 DSC | " | " |
| C128 | | | | | |
| C129 | " | 1000 pF | SW1 OSC | " | " |

| <u>Symbol</u> <u>Location</u> | <u>Description</u> | | <u>Remarks</u> | <u>Part No.</u> |
|----------------------------------|--------------------|---------------------|-----------------|-----------------|
| R1 | Res. | 330 ohm TR1 Emit. | 1/4W $\pm 10\%$ | |
| R2 | " | 100K ohm TR1 Base | " " | |
| R3 | " | 680 ohm TR1 Coll. | " " | |
| R4 | " | 22 ohm - B line | " " | |
| R5 | " | 2.7K ohm B. F. O. | | |
| R6 | " | 47K ohm TR2 Base | 1/4W $\pm 10\%$ | |
| R7 | " | 22 ohm TR2 Emit. | " " | |
| R8 | " | 33K ohm TR2 Base | " " | |
| R9 | " | 10K ohm FM OSC | " " | |
| R10 | " | 1M ohm A.F. C. | " " | |
| R11 | " | 330 ohm FM 1st IF | " " | |
| R12 | " | 220K ohm A. F. C. | " " | |
| R13 | " | 68K ohm " | " " | |
| R14 | " | 6.8K ohm " | " " | |
| R15 | " | 1K ohm TR3 Coll. | " " | |
| R16 | " | 2.2K ohm TR3 Emit. | " " | |
| R17 | " | 3.3K ohm AM ANT. | " " | |
| R18 | " | 330 ohm LW RF | " " | |
| R19 | " | 680 ohm " | " " | |
| R20 | " | 1K ohm TR3 Emit. | " " | |
| R21 | " | 10K ohm SW3 ANT. | " " | |
| R22 | " | 6.8K ohm SW4 ANT. | " " | |
| R23 | " | 27K ohm SW2 ANT. | " " | |
| R24 | " | 22 ohm TR13 Emit. | " " | |
| R25 | " | 8.2K ohm TR13 Base | " " | |
| R26 | " | 6K ohm " | " " | |
| R27 | " | 2.2K ohm TR13 Emit. | " " | |
| R28 | " | 1K ohm -B line | " " | |
| R29 | " | 10 ohm SW3, OSC | " " | |
| R30 | " | " SW3, OSC | " " | |
| R31 | " | 4.7K ohm TR16 Base | | |
| R32 | " | 22 ohm SW4 OSC | 1/4W $\pm 10\%$ | |
| R33 | " | 56 ohm SW3 OSC | " " | |
| R34 | " | 150 ohm SW2 OSC | " " | |

| <u>Symbol</u> <u>Location</u> | <u>Description</u> | | <u>Remarks</u> | <u>Part No.</u> |
|----------------------------------|--------------------|--------------------|----------------|-----------------|
| R35 | Res. | 10 ohm SW2 OSC | 1/4W | $\pm 10\%$ |
| R36 | " | 220 ohm SW1 OSC | " | " |
| R37 | " | 10 ohm SW1 OSC | " | " |
| R38 | " | 22 ohm AM OSC | " | " |
| R39 | | | | |
| R40 | Res. | 6.8K ohm TR4 Base | 1/4W | $\pm 10\%$ |
| R41 | " | 330 ohm TR4 Coll. | " | " |
| R42 | " | 680 ohm TR4 Emit. | " | " |
| R43 | " | 22 ohm -B line | " | " |
| R44 | " | 10K ohm TR5 Base | " | " |
| R45 | " | 2.7K ohm " | " | " |
| R46 | " | 330 ohm TR5 Coll. | " | " |
| R47 | " | 680 ohm TR5 Emit. | " | " |
| R48 | " | 10K ohm TR6 Base | " | " |
| R49 | " | 22 ohm - B line | " | " |
| R50 | " | 3.3K ohm TR6 Base | " | " |
| R51 | " | 330 ohm TR6 Coll. | " | " |
| R52 | " | 680 ohm TR6 Emit. | " | " |
| R53 | " | " | " | " |
| R54 | " | 4.7K ohm TR7 Base | " | " |
| R55 | " | 10K ohm " | " | " |
| R56 | " | 33K ohm | " | " |
| R57 | " | 1.5K ohm TR7 Coll. | " | " |
| R58 | " | 680 ohm TR7 Emit. | " | " |
| R59 | " | 1K ohm FM Det. | " | " |
| R60 | " | 10K ohm " | " | " |
| R61 | " | 10K ohm FM Det. | " | " |
| R62 | " | 100 ohm " | " | " |
| R63 | " | 1M ohm | " | " |
| R64 | " | 33K ohm | " | " |
| R65 | " | 1K ohm TR8 Base | " | " |
| R66 | " | | | |
| R67 | " | 47K ohm TR8 Base | 1/4W | $\pm 10\%$ |
| R68 | " | 6.8K ohm TR9 Base | " | " |

| <u>Symbol</u> <u>Location</u> | | <u>Description</u> | | <u>Remarks</u> | | <u>Part No.</u> |
|----------------------------------|------|--------------------|-------------|----------------|------------|-----------------|
| R69 | Res. | 47 ohm | TR8 Emit. | 1/4W | $\pm 10\%$ | |
| R70 | " | 4.7K ohm | TR9 Coll. | " | " | |
| R71 | " | 2.2K ohm | TR10 Emit. | " | " | |
| R72 | " | 15K ohm | TR10 Coll. | " | " | |
| R73 | " | 22 ohm | -B line | " | " | |
| R74 | " | 3.3K ohm | TR11 Emit. | " | " | |
| R75 | " | 270K ohm | TR11 Coll. | " | " | |
| R76 | " | 680 ohm | TR11 Emit. | " | " | |
| R77 | " | 18K ohm | TR12 Base | " | " | |
| R78 | " | 22 ohm | -B line | " | " | |
| R79 | " | 4.7K ohm | TR12 Base | " | " | |
| R80 | " | 680 ohm | TR12 Emit. | " | " | |
| R81 | " | 10K ohm | AM Det. | " | " | |
| R82 | " | 4.7K ohm | " | " | " | |
| R83 | " | 1.5K ohm | " | " | " | |
| R84 | " | 22K ohm | " | " | " | |
| R85 | " | 82K ohm | " | " | " | |
| R86 | " | 33K ohm | " | " | " | |
| R87 | " | 22K ohm | TR14 Base | " | " | |
| R88 | " | | | | | |
| R89 | " | 56K ohm | TR14 Base | 1/4W | $\pm 10\%$ | |
| R90 | " | 4.7K ohm | TR14 Emit. | " | " | |
| R91 | " | 330K ohm | TR15 Base | " | " | |
| R92 | " | 10K ohm | TR15 Coll. | " | " | |
| R93 | " | 6.8K ohm | TR15 Emit. | " | " | |
| R94 | " | 180K ohm | TR15 Base | " | " | |
| R95 | " | 2.2K ohm | TR15 Emit. | " | " | |
| R96 | " | 100K ohm | | " | " | |
| R97 | " | 15K ohm | TR16 Base | " | " | |
| R98 | | | | | | |
| R99 | Res. | 220 ohm | Audio Power | 1/4W | $\pm 10\%$ | |
| R100 | " | 27K ohm | TR16 Base | " | " | |
| R101 | " | 3.3K ohm | TR16 Emit. | " | " | |
| R102 | " | 22 ohm | TR16 Emit. | " | " | |

| <u>Symbol</u> <u>Location</u> | <u>Description</u> | | | <u>Remarks</u> | | <u>Part No.</u> |
|----------------------------------|--------------------|------------|-----------------------|-----------------|------|-----------------|
| R103 | Res. | 3.3K ohm | TR16 Coll. | 1/4W | ±10% | |
| R104 | " | 5.6K ohm | TR17 Base | " | " | |
| R105 | " | 47K ohm | " | " | " | |
| R106 | " | 330 ohm | TR17 Emit. | " | " | |
| R107 | " | 68 ohm | -B line | " | " | |
| R108 | " | 2.2K ohm | TR18 Coll. | " | " | |
| R109 | " | 220 ohm | Audio power | " | " | |
| R110 | " | 2.2K ohm | " | " | " | |
| R111 | " | 15 ohm | EP/SP | 1/2W | " | |
| R112 | " | 22 ohm | -B line | 1/4W | " | |
| R113 | " | 2.2 ohm | Voltage stabilizer | 1/2W | " | |
| R114 | " | 330 ohm | " | " | " | |
| R115 | " | 2.2K ohm | | 1/4W | " | |
| R116 | " | 10 ohm | SW5 OSC | " | " | |
| R117 | " | 220 ohm | LW OSC | " | " | |
| R118 | " | 100 ohm | " | " | " | |
| R119 | " | 3.3K ohm | | " | " | |
| R120 | " | 22K ohm | TR4 Base | " | " | |
| R131 | " | 1K ohm | LW RF | " | " | |
| R132 | " | 150 ohm | TR2 Coll. | " | " | |
| R133 | " | 47K ohm | TR15 Base | " | " | |
| Volume control with switch | | | | 5K ohm | | |
| Tone/squelch control with switch | | | | 50K ohm/10K ohm | | |
| TR1 | SE-5006 | FM RF amp. | Transistor NPN type | | | |
| TR2 | SE-3001 | FM MIX | " | " | | |
| TR3 | " | LW RF amp. | " | " | | |
| TR4 | " | FM IF amp. | " | " | | |
| TR5 | " | " | " | " | | |
| TR6 | " | " | " | " | | |
| TR7 | " | " | " | " | | |
| TR8 | CS-1254 | Squelch | " | " | | |
| TR9 | " | " | " | " | | |
| TR10 | SE-5001 | AM IF amp. | " | " | | |

| <u>Symbol</u> <u>Location</u> | | <u>Description</u> | <u>Remarks</u> | <u>Part No.</u> |
|----------------------------------|--------------------|--------------------|---------------------|-----------------|
| TR11 | SE-1001 | AM IF amp. | Transistor NPN type | |
| TR12 | " | " | " | " |
| TR13 | SE-5006 | AM OSC | " | " |
| TR14 | CS-1254 | B. F. O. | " | " |
| TR15 | SE-4010 | AF amp. | " | " |
| TR16 | 2SB 185 | " | " | PNP type |
| TR17 | 2SB 187 | Audio driver | " | " |
| TR18 | 2SB 405 | Audio Power | " | " |
| TR19 | " | " | " | " |
| TR20 | " | Voltage stabilizer | " | " |
| D1 | 1S351 | A. F. C. | Germanium diode | |
| D2 | 1N60 | AM Det. | " | |
| D3 | " | Squelch | " | |
| D4 | " | Limiter | " | |
| D5 | " | Tuning indicator | " | |
| D6 | " | A. G. C. | " | |
| D7 | " | " | " | |
| D8 | 1N60 (P) | FM Det. | " | |
| D9 | " | " | " | |
| D10 | 1N60 | Squelch | " | |
| D11 | " | " | " | |
| D12 | 10D-1 | Rectifier | Silicon diode | |
| D13 | 1S334 | " | Zener diode | |
| D14 | DS-18 | " | Silicon diode | |
| TH1 | 5D-170 | Thermistor | Temperature | |
| TH2 | " | " | Compensator | |
| L1 | Filter coil for FM | | | R170047 |
| L2 | " | | | R170048 |
| L3 | FM ANT coil | | | " |
| L4 | FM RF coil | | | R160131 |
| L5 | Trap coil | | | R170050 |

| <u>Symbol</u> <u>Location</u> | <u>Description</u> | | <u>Remarks</u> | <u>Part No.</u> |
|----------------------------------|------------------------|-------------|----------------|-----------------|
| L6 | FM OSC coil | | | R165001 |
| L7 | | | | |
| L8 | AM ANT coil (AM-178) | | | R180178 |
| L9 | LW | " " | | " |
| L10 | SW1 | " (AM-177) | | R180177 |
| L11 | SW2 | " " | | " |
| L12 | SW3 | " (AM-184) | | R180184 |
| L13 | SW4 | " (AM-183) | | R180183 |
| L14 | SW5 | " (AM-159) | | R180159 |
| L15 | SW5 OSC coil (OMO-165) | | | R160165 |
| L16 | SW4 | " (OMO-149) | | R160149 |
| L17 | SW3 | " " | | " |
| L18 | SW2 | " (OMO-148) | | R160148 |
| L19 | SW1 | " (OMO-147) | | R160147 |
| L20 | AM | " (OMO-146) | | R160146 |
| L21 | LW | " (OMO-155) | | R160155 |
| L22 | BFO OSC coil (OMO-168) | | | R160168 |
| L23 | Filter coil | | | R151001 |
| L24 | " | for power | | R130014 |
| L25 | " | " | | " |
| | | | | |
| T1 | Transformer | K-102 | FM 1st IFT | R15093 |
| T2 | " | K-112 | FM 2nd IFT | R15124 |
| T3 | " | K-113 | " | R15125 |
| T4 | " | K-112 | FM 3rd IFT | R15124 |
| T5 | " | K-113 | " | R15125 |
| T6 | " | K-102 | FM 4th IFT | R15093 |
| T7 | " | WK-104 | FM Det. | R15094 |
| T8 | " | A-16 | AM 1st IFT | R15120 |
| T9 | " | A-18 | " | R15126 |
| T10 | " | B-13 | AM 2nd IFT | R15086 |
| T11 | " | C-24 | AM 3rd IFT | R151031 |
| T12 | Transformer for driver | | | G12324 |
| T13 | Power transformer | | | R110056 |

| <u>Symbol</u> <u>Location</u> | <u>Description</u> | <u>Remarks</u> | <u>Part No.</u> |
|----------------------------------|--------------------|----------------|----------------------------|
| TC1 | Trimmer | FM ANT. | |
| TC2 | " | FM RF. | |
| TC3 | " | LW ANT. | Capacitor max. 8pF R213012 |
| TC4 | " | AM ANT. | " " " |
| TC5 | " | SW1 ANT. | " " " |
| TC6 | " | SW2 ANT. | " " " |
| TC7 | " | SW3 ANT. | " 16pF R213013 |
| TC8 | " | SW4 ANT. | " " " |
| TC9 | " | SW5 ANT. | " " " |
| TC10 | " | SW5 OSC. | " " " |
| TC11 | " | SW4 OSC. | " " " |
| TC12 | " | SW3 OSC. | " " " |
| TC13 | " | SW2 OSC. | " 8pF R213012 |
| TC14 | " | SW1 OSC. | " " " |
| TC15 | " | AM OSC. | " " " |
| TC16 | " | LW OSC. | " " " |

| | |
|-----|--|
| VC1 | } Variable Capacitor Tuning four section with trimmers |
| VC2 | |
| VC3 | |
| VC4 | |

TF-182

| | | |
|-----------------------------------|------------------|---------|
| Screw for Variable Capacitor | 2 pcs. BB + 2604 | |
| Deck | | R610285 |
| Screw for main P. C. board ass'y | 3 pcs. BB + 3006 | |
| " | BN + 3006 | |
| Washer for main P. C. board ass'y | 4 pcs. | |
| Holder(A) for ferrite antenna | | R633060 |
| Spring Washer for holder (A) | 2 pcs. VB 301 | |
| Screw for holder (A) | 2 pcs. BB + 3006 | |
| Holder(B) for ferrite antenna | | R633061 |
| Spring washer for holder (B) | 2 pcs. VB 301 | |
| Screw for holder(B) | 2 pcs. BB + 3006 | |
| Hook up terminal board | | G43057 |
| Spring washer for hook up | VB 301 | |
| Nut for hook up | NMB 301 | |

| <u>Symbol Location</u> | <u>Description</u> | <u>Remarks</u> | <u>Part No.</u> |
|----------------------------|----------------------------------|----------------------|-----------------|
| | Fixture for pair transistor | | R66051 |
| | Fixture for rectifier transistor | | R651038 |
| | Screw for fixture | 2 pcs. BB + 3008 | |
| | Spring washer for fixture | 2 pcs. VB 301 | |
| | Nut for fixture | 2 pcs. NMB 301 | |
| | Power transformer | | R110056 |
| | Cord for Power Transformer | Grey 6 feet | R440033 |
| | Connector | 2 pcs. | R437004 |
| | Fixture for Cord | | |
| | Washer for Fixture | ZB 301 | |
| | Screw for Fixture | BB + 3010 | |
| | Cord Stopper | Black | R81707 |
| | Earphone Jack | 2 pcs. | G43959 |
| | Antenna Jack | 1 pcs. | G43959 |
| | Main P. C. board | | R530194 |
| | Audio P. C. board | | R530195 |
| | B. F. O. P. C. board | | R530196 |
| | Cabinet | | R840554 |
| | Front cover | | R810959 |
| | Tapping Screw for Stopper | 4 pcs. B type + 2006 | |
| | Magnet A for front cover | 2 pcs. | R636261 |
| | Tapping Screw for Magnet | 2 pcs. B type + 2606 | |
| | Time indicator plate | | R636319 |
| | The base of time indicator | | R810918 |
| | Shaft for time indicator | | R680068 |
| | Cushion for time indicator | | R810925 |
| | Stopper for shaft | | |
| | Washer for shaft | ZB 301 | |
| | A map of world | | R636274 |
| | Time indicator | | R636267 |
| | Name plate of front cover | | R636318 |
| | Handle | | R810915 |
| | Screw for handle | 5 pcs. BS + 3015 | |
| | Metal assembly for handle | | |
| | Washer for metal assembly | 8 pcs. ZB 301 | |
| | Screw for metal assembly | 4 pcs. BB + 3006 | |
| | " | 4 pcs. BB + 3016 | |
| | Spring washer for metal ass'y | 8 pcs. VB 301 | |
| | Bolt for metal assembly | MBO 310 | |
| | " | 4 pcs. MBO 316 | |
| | " | MBO 314 | |

| <u>Symbol Location</u> | <u>Description</u> | <u>Remarks</u> | <u>Part No.</u> |
|----------------------------|-------------------------------|--------------------------------|-----------------|
| | Antenna core holder | 4 pcs. | R81725 |
| | Screw for antenna core holder | 4 pcs. BB + 3018 | |
| | Nut for " | 4 pcs. NMB 301 | |
| | Tuning shaft | | R97663 |
| | Special washer | | R93014 |
| | Fine tuning | | R261005 |
| | Holder for band selector | | R633062 |
| | Tapping screw for holder | 2 pcs. | |
| | Screw for holder | 4 pcs. BB + 3005 | |
| | Fixture for push buttons | (Shaft) 5 ϕ | R680070 |
| | Special washer for shaft | 2 pcs. | |
| | E type lag | 2 pcs. 3 ϕ | |
| | Washer for shaft | 2 pcs. | |
| | Push buttons | 8 pcs. White | R810916 |
| | Spring for push buttons | 8 pcs. | R700244 |
| | Double Pulley | 2 pcs. Black | R644017 |
| | Shaft for Double Pulley | 2 pcs. | R680071 |
| | Spring washer for shaft | 2 pcs. VB 301 | |
| | Nut for shaft | 2 pcs. NMB 301 | |
| | E type lag | 2 pcs. 3 ϕ | |
| | Pulley | 2 pcs. | R64409 |
| | Small Pulley | White | R67272 |
| | Shaft for small pulley | | R680072 |
| | Screw for Shaft | BB + 2005 | |
| | Spring washer for Shaft | VB 301 | |
| | Nut for Shaft | NMB 301 | |
| | Dial String | 0.5 ϕ 1500 m/m | R70002 |
| | Spring for dial string | | |
| | Eyelet | 2 ϕ x 3 | |
| | Fixture for Dial Backing | (Shaft A) 2 pcs. | R676065 |
| | Spring washer for Shaft | 2 pcs. VB 301 | |
| | Nut for Shaft | 2 pcs. NMB 301 | |
| | Fixture for Dial Backing | (Shaft B) 2 pcs. | |
| | Spring washer for shaft | 2 pcs. VB 301 | |
| | Nut for shaft | 2 pcs. NMB 301 | |
| | Dial Backing (Metal) | | R620219 |
| | Sticker (Dial Backing) | | R851142 |
| | Screw for dial backing | 4 pcs. BB + 3006 | |
| | Small lamp | 5 pcs. 9V/30mA | R411003 |
| | Pointer | Red | R877027 |
| | Felt ring for pointer | 2 pcs. 1.2 ϕ x 4.5 ϕ | |
| | Heat sink | | R651178 |
| | Screw for heat sink | BB + 3006 | |
| | Spring washer for heat sink | VB 301 | |

| <u>Symbol</u> <u>Location</u> | <u>Description</u> | <u>Remarks</u> | <u>Part No.</u> |
|----------------------------------|---|----------------------|-----------------|
| | Telescopic rod antenna | | R180085 |
| | Screw for rod antenna | BB + 4012 | |
| | Spring washer for rod antenna | VB 401 | |
| | Washer for rod antenna | ZB 401 | |
| | Net for speaker | | R851152 |
| | Decoration panel A | | R636268 |
| | " B | | R636269 |
| | " C | | R636270 |
| | Indicator panel for band selector | | R636321 |
| | Reflector paper | 2 pcs. | R810941 |
| | Dial | | R860476 |
| | Name plate for expression transistor | | R636272 |
| | Name plate for expression switch on-off | | R636320 |
| | Decoration panel | Grain printing | R636277 |
| | Tuning meter | 200 μ A | R590024 |
| | Cover for tuning meter | Green | R820120 |
| | Badge | | R636322 |
| | Side piece board | Left side | R810908 |
| | Bolt for side piece board | 5 pcs. MBO 316 | |
| | Nut for side piece board | 2 pcs. U type | |
| | Washer for " | 5 pcs. ZB 301 | |
| | Nut for " | 5 pcs. NMB 303 | |
| | Decoration panel for Left side board | (small) | R636262 |
| | " | (big) | R636265 |
| | Screw for rear cabinet | 2 pcs. BB + 3020 | |
| | " | 2 pcs. BB + 3026 | |
| | Battery snap | | R440027 |
| | Battery case | | R810922 |
| | Cushion for Battery | 2 pcs. | R830358 |
| | Knob-spring for battery door | 2 pcs. | R810917 |
| | Knob for battery door | 2 pcs. | R700243 |
| | Washer for Knob | 2 pcs. ZB 231 | |
| | Tapping Screw for battery door | B Type + 2006 | |
| | Spacer for main P. C. board | L=12mm | R676070 |
| | Stud for Audio P. C. board | L=25mm | R676069 |
| | Tapping Screw for P. C. board assembly | 8 pcs. B type + 3012 | |
| | Screw for P. C. board assembly | BB + 3008 | |
| | Washer for " | 9 pcs. Fiber | R93031 |

| <u>Symbol Location</u> | <u>Description</u> | <u>Remarks</u> | <u>Part No.</u> |
|----------------------------|---------------------------------------|---------------------------------|-----------------|
| | Leather for side piece board | 2 pcs. Grain printing | R810923 |
| | Net for rear cabinet | | R851140 |
| | Crush washer for chassis | | |
| | Fixture metal for front cover | 4 pcs. | |
| | Battery | 6 pcs. "D" cell MAXELL brand | R470028 |
| | Polyethylene bag for battery | | R810808 |
| | Earphone | | G45211 |
| | Polyethylene bag for earphone | | R81612 |
| | Supporter for ferrite core Antenna | Rubber block | R830379 |
| | Polyethylene bag for set | | R810921 |
| | Packing paper | | |
| | Polyethylene bag for power cord | | R810807 |
| | Individual packing box | | R885263 |
| | Master packing box | 1/2 pcs. | R885264 |
| | Operating instruction booklet | | R890227 |
| | Squelch tag | | R890229 |
| | Voltage card | | R890198 |
| | Instruction for Battery case | | R890217 |
| | Spacer for rear cabinet | | R810960 |
| | AUX. Jack | | R438012 |
| | Screw for AUX. Jack | 2 pcs. BB + 2610 | |
| | Spring washer for AUX. Jack | 2 pcs. VB 261 | |
| | Nut for AUX. Jack | 2 pcs. NMB 261 | |
| | Slide switch | | G42324 |
| | Screw for slide switch | 2 pcs. SS + 2106 | |
| | Spacer for Badge | | R851182 |

[For TF-182FB only use]

| | | | |
|--|-----------------------------------|-------------------------------|---------|
| | Screw for Variable Capacitor | 2 pcs. BB + 2604 | |
| | Deck | | R610285 |
| | Screw for main P. C. board ass'y | 3 pcs. BB + 3006 BN + 3006 | |
| | Washer for main P. C. board ass'y | 4 pcs. | |

| <u>Symbol Location</u> | <u>Description</u> | <u>Remarks</u> | <u>Part No.</u> |
|----------------------------|--|----------------------|-----------------|
| | Nut for power transf. | 2 pcs. NMB 301 | |
| | Washer for power transf. | 2 pcs. | |
| | Screw for P. C board assembly | 2 pcs. BB + 3010 | |
| | Screw for Fixture cord | BB + 3010 | |
| | Washer for power transf. | ZB 301 | |
| | Special washer for power transf. | 2 pcs. | R93015 |
| | Name plate for rear cabinet | | R636317 |
| | Bolt for P. C board assembly | 2 pcs. MBO 314 | |
| | Tuning Knob | | R871059 |
| | Felt for tuning Knob | | R851138 |
| | Squelch Knob | | R871063 |
| | Tone Knob | | R871062 |
| | Felt for tone Knob | | R851139 |
| | Fine tuning Knob | | R871058 |
| | Volume control Knob | | " |
| | Felt for VR Knob | 2 pcs. | R851139 |
| | B. F. O. Switch | Seasaw switch | R429003A |
| | A. F. C. Switch | Seasaw switch | R429003A |
| | Tapping screw for B. F. O Switch | 4 pcs. B type + 3008 | |
| | Spring washer for A. F. C switch | 4 pcs. VB 301 | |
| | Cover for B. F. O and A. F. C. Switch | 2 pcs. | R851136 |
| | Knob for dial lamp | White | R951089A |
| | Washer for knob | ZB 201 | |
| | Screw for knob | BC + 2005 | |
| | Dial lamp switch | | |
| | Tapping screw for dial lamp switch | 2 pcs. | |
| | Speaker | 5" | R450064 |
| | Washer for speaker | 4 pcs. ZB 301 | |
| | Spring washer for speaker | 4 pcs. VB 301 | |
| | Nut for speaker | 4 pcs. NMB 303 | |
| | Egg type lag | 2 pcs. | |
| | Side piece board | Right side | R810905 |
| | Bolt for side piece board | 5 pcs. MBO 316 | |
| | Nut for " | 2 pcs. U type | |
| | Washer for " | 5 pcs. ZB 301 | |
| | Nut for " | 5 pcs. NMB 303 | |
| | Washer for " | 7 pcs. Fiber | R93031 |
| | Decoration panel for right side board | (small) | R636263 |
| | " | (big) | R636264 |

| <u>Symbol</u> <u>Location</u> | <u>Description</u> | <u>Remarks</u> | <u>Part No.</u> |
|----------------------------------|--------------------------------|---------------------|-----------------|
| | Holder (A) for ferrite antenna | | R633060 |
| | Spring Washer for holder(A) | 2 pcs. VB 301 | |
| | Screw for holder(A) | 2 pcs. BB + 3006 | |
| | Holder (B) for ferrite antenna | | R633061 |
| | Spring washer for holder(B) | 2 pcs. VB 301 | |
| | Screw for holder(B) | 2 pcs. BB + 3006 | |
| | Hook up terminal board | | G43057 |
| | Spring washer for hook up | VB 301 | |
| | Nut for hook up | NMB 301 | |
| | Antenna core holder | 4 pcs. | R81725 |
| | Screw for antenna core holder | 4 pcs. BB + 3018 | |
| | Nut for " | 4 pcs. NMB 301 | |
| | Tuning shaft | | R97663 |
| | Special washer | | R93014 |
| | Fine tuning | | R261005 |
| | Holder for band selector | | R633062 |
| | Tapping screw for holder | 2 pcs. | |
| | Screw for holder | 4 pcs. BB + 3005 | |
| | Fixture for push buttons | (Shaft) 5 ϕ | R680070 |
| | Special washer for shaft | 2 pcs. | |
| | E type lag | 2 pcs. 3 ϕ | |
| | Washer for shaft | 2 pcs. | |
| | Push buttons | 8 pcs. White | R810916 |
| | Spring for push buttons | 8 pcs. | R700244 |
| | Double Pulley | 2 pcs. Black | R644017 |
| | Shaft for Double Pulley | 2 pcs. | R680071 |
| | Spring washer for shaft | 2 pcs. VB 301 | |
| | Nut for shaft | 2 pcs. NMB 301 | |
| | E type lag | 2 pcs. 3 ϕ | |
| | Pulley | 2 pcs. | R64409 |
| | Small Pulley | White | R67272 |
| | Shaft for small pulley | | R680072 |
| | Screw for Shaft | BB + 2005 | |
| | Spring washer for Shaft | VB 301 | |
| | Nut for Shaft | NMB 301 | |
| | Dial String | 0.5 ϕ 1500 m/m | R70002 |
| | Spring for dial string | | |
| | Eyelet | 2 ϕ x 3 | |
| | Fixture for Dial Backing | (Shaft A) 2 pcs. | R676065 |
| | Spring washer for Shaft | 2 pcs. VB 301 | |
| | Nut for Shaft | 2 pcs. NMB 301 | |
| | Fixture for Dial Backing | (Shaft B) 2 pcs. | |
| | Spring washer for shaft | 2 pcs. VB 301 | |
| | Nut for shaft | 2 pcs. NMB 301 | |

| <u>Symbol Location</u> | <u>Description</u> | <u>Remarks</u> | <u>Part No.</u> |
|----------------------------|----------------------------------|----------------------|-----------------|
| | Dial Backing (Metal) | | R620219 |
| | Sticker (Dial Backing) | | R851142 |
| | Screw for dial backing | 4 pcs. BB + 3006 | |
| | Small lamp | 5 pcs. 9V/30mA | R411003 |
| | Pointer | Red | R877027 |
| | Felt ring for pointer | 2 pcs. 1.2ϕ x 4.5ϕ | |
| | Heat sink | | R651178 |
| | Screw for heat sink | BB + 3006 | |
| | Spring washer for heat sink | VB 301 | |
| | Fixture for pair transistor | | R66051 |
| | Fixture for rectifier transistor | | R651038 |
| | Screw for fixture | 2 pcs. BB + 3008 | |
| | Spring washer for fixture | 2 pcs. VB 301 | |
| | Nut for fixture | 2 pcs. NMB 301 | |
| | Power transformer | | R110056 |
| | Cord for Power Transformer | Grey 6 feet | R440033 |
| | Connector | 2 pcs. | R437004 |
| | Fixture for Cord | | |
| | Washer for Fixture | ZB 301 | |
| | Screw for Fixture | BB + 3010 | |
| | Cord Stopper | Black | R81707 |
| | Earphone Jack | 2 pcs. | G43959 |
| | Antenna Jack | 1 pc. | G43959 |
| | Main P. C. board | | R530194 |
| | Audio P. C. board | | R530195 |
| | B. F. O. P. C. board | | R530196 |
| | Cabinet | | R840554A |
| | Front cover | | R810959A |
| | Tapping Screw for Stopper | 4 pcs. B type + 2006 | |
| | Magnet A for front cover | 2 pcs. | R636261 |
| | Tapping Screw for Magnet | 2 pcs. B type + 2606 | |
| | Time indicator plate | | R636319A |
| | The base of time indicator | | R810918 |
| | Shaft for time indicator | | R680068 |
| | Cushion for time indicator | | R810925 |
| | Stopper for shaft | | |
| | Washer for shaft | ZB 301 | |
| | A map of world | | R636274A |
| | Time indicator | | R636267A |
| | Name plate of front cover | | R636373 |

| <u>Symbol</u> <u>Location</u> | <u>Description</u> | <u>Remarks</u> | <u>Part No.</u> |
|----------------------------------|---|------------------|-----------------|
| | Handle | | R810915A |
| | Screw for handle | 5 pcs. BS + 3015 | |
| | Metal assembly for handle | | |
| | Washer for metal assembly | 8 pcs. ZB 301 | |
| | Screw for metal assembly | 4 pcs. BB + 3006 | |
| | " | 4 pcs. BB + 3016 | |
| | Spring washer for metal assembly | 8 pcs. VB 301 | |
| | Bolt for metal assembly | MBO 310 | |
| | " | 4 pcs. MBO 316 | |
| | " | MBO 314 | |
| | Telescopic rod antenna | | R180085A |
| | Screw for rod antenna | BB + 4012 | |
| | Spring washer for rod antenna | VB 401 | |
| | Washer for rod antenna | ZB 401 | |
| | Net for speaker | | R851152 |
| | Decoration panel A | | R636268 |
| | " B | | R636269 |
| | " C | | R636270 |
| | Indicator panel for band selector | | R636321 |
| | Reflector paper | 2 pcs. | R810941 |
| | Dial | | R860481 |
| | Name plate for expression transistor | | R63272A |
| | Name plate for expression switch on-off | | R636371 |
| | Decoration panel | Grain printing | R636372 |
| | Tuning meter | 200 μ A | R590024 |
| | Cover for tuning meter | Green | R820120 |
| | Badge | | R636322 |
| | Side piece board | Left side | R810908 |
| | Bolt for side piece board | 5 pcs. MBO 316 | |
| | Nut for side piece board | 2 pcs. U type | |
| | Washer for " | 5 pcs. ZB 301 | |
| | Nut for " | 5 pcs. NMB 303 | |
| | Decoration panel for Left side board | (small) | R636262 |
| | " | (big) | R636265 |
| | Screw for rear cabinet | 2 pcs. BB + 3020 | |
| | " | 2 pcs. BB + 3026 | |
| | Battery snap | | R440027 |
| | Battery case | | R810922 |

| <u>Symbol Location</u> | <u>Description</u> | <u>Remarks</u> | <u>Part No.</u> |
|----------------------------|--|----------------------|-----------------|
| | Cushion for Battery | 2 pcs. | R830358 |
| | Knob-spring for battery door | 2 pcs. | R810971 |
| | Knob for battery door | 2 pcs. | R810917A |
| | Washer for Knob | 2 pcs. ZB 231 | |
| | Tapping Screw for battery door | B Type + 2006 | |
| | Spacer for main P. C board | L=12mm | R676070 |
| | Stud for Audio P. C board | L=25mm | R676069 |
| | Tapping Screw for P. C board assembly | 8 pcs. B type + 3012 | |
| | Screw for P. C board assembly | BB + 3008 | |
| | Washer for " | 9 pcs. Fiber | R93031 |
| | Nut for power transf. | 2 pcs. NMB 301 | |
| | Washer for power transf. | 2 pcs. | |
| | Screw for P. C board assembly | 2 pcs. BB + 3010 | |
| | Screw for Fixture cord | BB + 3010 | |
| | Washer for power transf. | ZB 301 | |
| | Special washer for power transf. | 2 pcs. | R93015 |
| | Name plate for rear cabinet | | R636374 |
| | Bolt for P. C. board assembly | 2 pcs. MBO 314 | |
| | Tuning Knob | | R871057 |
| | Felt for tuning Knob | | R851186 |
| | Squelch Knob | | R871053 |
| | Tone Knob | | R871054 |
| | Felt for tone Knob | | R851185 |
| | Fine tuning Knob | | R871057 |
| | Volume control Knob | | R871080 |
| | Felt for VR Knob | 2 pcs. | R851185 |
| | B. F. O. Switch | Seesaw switch | R429003A |
| | A. F. C. Switch | Seesaw switch | R429003A |
| | Tapping screw for B. F. O. Switch | 4 pcs. B type + 3008 | |
| | Spring washer for A. F. C. Switch | 4 pcs. VB 301 | |
| | Cover for B. F. O and A. F. C. Switch | 2 pcs. | R851136 |
| | Knob for dial lamp | White | R95065 |
| | Washer for knob | ZB 201 | |
| | Screw for knob | BC + 2005 | |
| | Dial lamp switch | | |
| | Tapping screw for dial lamp switch | 2 pcs. | |
| | Speaker | 5" | R450064 |
| | Washer for speaker | 4 pcs. ZB 301 | |

| <u>Symbol Location</u> | <u>Description</u> | <u>Remarks</u> | <u>Part No.</u> |
|----------------------------|--|----------------------------------|-----------------|
| | Spring washer for speaker | 4 pcs. VB 301 | |
| | Nut for speaker | 4 pcs. NMB 303 | |
| | Egg type lag | 2 pcs. | |
| | Side piece board | Right side | R810905 |
| | Bolt for side piece board | 5 pcs. MBO 316 | |
| | Nut for " | 2 pcs. U type | |
| | Washer for " | 5 pcs. ZB 301 | |
| | Nut for " | 5 pcs. NMB 303 | |
| | Washer for " | 7 pcs. Fiber | R93031 |
| | Decoration panel for right side board | (small) | R636263 |
| | " | (big) | R636264 |
| | Leather for side piece board | 2 pcs. Black | R810923A |
| | Net for rear cabinet | | R851140 |
| | Crush washer for chassis | | |
| | Fixture metal for front cover | 4 pcs. | |
| | Battery | 6 pcs. "D" cell MAXWELL Brand | R470028 |
| | Polyethylene bag for battery | | R810808 |
| | Earphone | | G45211 |
| | Polyethylene bag for earphone | | R81612 |
| | Supporter for ferrite core Antenna | Rubber block | R830379 |
| | Polyethylene bag for set | | R810921 |
| | Packing paper | | |
| | Polyethylene bag for power cord | | R810807 |
| | Individual packing box | | R885287 |
| | Master packing box | 1/2 pcs. | R885264 |
| | Operating instruction booklet | | R890244 |
| | Squelch tag | | R890225A |
| | Voltage card | | R890198 |
| | Instruction for Battery case | | R890217 |
| | Spacer for rear cabinet | | R810960 |
| | AUX. Jack | | R438012 |
| | Screw for AUX. Jack | 2 pcs. BB + 2610 | |
| | Spring washer for AUX. Jack | 2 pcs. VB 261 | |
| | Nut for AUX. Jack | 2 pcs. NMB 261 | |
| | Slide switch | | G42324 |
| | Screw for slide switch | 2 pcs. SS + 2606 | |
| | Spacer for Badge | | R851182 |

CIRCUIT DIAGRAM MODEL : TF-182 & TF-182 FB

